

REMARKS

Claims 1 and 3-37 are pending herein with Claims 1, 11, 27, and 28 being independent claims. Claim 28 is amended herein to correct a typographical error. All claims stand rejected. Responsive to each paragraph of the Office Action, the Applicant has the following remarks:

35 U.S.C. § 112:

Claim 1 was rejected under 35 U.S.C. § 112 as failing to comply with the written description requirement. The Examiner stated that the limitation of the partially reacted fuel fluid and oxygen fluid exchanging heat "without reacting" did not seem to be supported. The Applicant respectfully traverses the rejection. Page 4 of the specification states as follows:

The solid oxide fuel cell stack has an internal manifold which exchanges heat between the incoming fuel and pre-heated incoming oxidant. For example, a fuel delivery tube can be surrounded in an annular fashion by an oxidant delivery tube with feed tubes disposed in the annular cavity providing fuel flow from the fuel delivery tube to the fuel cells through the oxidant delivery tube while keeping the fuel and oxidant separated.

Page 4, lines 22 – 25. (Emphasis added).

The Applicant thus asserts that one of ordinary skill in the art would understand that a manifold is in fact non-reacting.

35 U.S.C. § 102:

Claims 1-5, 9, and 28-31 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,729, 931 to Grimble. The Applicant respectfully

traverses the rejection of independent Claim 1 and the dependent claims thereon.

Specifically, Grimble lacks the following limitations as called for in Claim 1:

1. A combustion chamber surrounding the fuel cell stack where the partially reacted oxidant fluid and the partially reacted fuel fluid are combusted. Grimble does not show a combustion chamber surrounding any of the individual fuel cells 5 much less anything that can be considered a fuel cell stack. The area surrounding the cells 5 within the walls 9 is for the passage of fuel only. The area within the cells 5 is for the passage of air only. The only passage where the fuel and the air meet is in the exhaust plenum 7. The Examiner, however, considers the exhaust plenum 7 to read on the claimed recuperator. Grimble thus simply does not show a combustion chamber surrounding a fuel cell stack as is claimed herein.

2. A manifold where heat is exchanged between the partially reacted fuel fluid and the partially reacted fuel oxidant fluid without reacting. Although the Examiner disagrees, the Applicant continues to assert that the air feed tube 6 does not act to exchange heat between the fuel and the air. If anything, heat may be exchanged across the air feed tube 6 between the incoming air and the exhaust air, but not with the fuel as is specifically claimed.

3. A recuperator surrounding the fuel cell stack and the combustion chamber. To the extent that the exhaust plenum 7 reads on the claimed recuperator, the exhaust plenum does not surround the fuel cell stack and the combustion chamber as is specifically claimed herein. Rather, the exhaust plenum 7 is on top of the individual cells 5. The specific structure as claimed is not shown in the reference.

Because Grimble does not show at least these three limitations, the Applicant asserts that the claim is patentable over the cited reference.

Similarly with respect to independent Claim 28, and the dependent claims thereon, Grimble has no disclosure of exchanging any type of second heat between the partially reacted fuel and the partially reacted oxidant without reacting the fuel and the oxidant. In the case of the cell 5, the fuel and the oxidant clearly are reacted. There is simply no disclosure that reads on the exchange of the second heat without reacting.

Claims 11-16, 20, and 21 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,303,243 to Schuler. The Applicant respectfully traverses the rejection of Claim 11 and the dependent claims thereon. The Examiner agreed that the tube 81 does not receive fluid from the second chamber 6. The Examiner stated, however, "that while this argument is found persuasive, the outer chamber (3) does meet the limitation of a second fluid delivered through the second flow orifice from the second interior cavity." Office Action at 7. In addition to the arguments stated in response to the previous Office Action and above, the Applicant notes that the "outer chamber" 3 is actually a sleeve 3 that is external to the wall 31. As such, the sleeve 3 does not meet the internal manifold limitation.

Further with respect to the separator plate limitation, it is noted that in Schuler the gas flow 58 runs adjacent to the active plates 21, not the interconnect 22. Claim 11, however, specifically recites a separator plate with a first channel about the anode layer and a second channel about cathode layer. The active plates 21 cannot read on both the fuel cell and the separator plate limitation. The Applicant thus submits that independent Claim 11 and the dependent claims thereon are patentable over the cited reference.

With respect to dependent Claim 12, the Examiner noted that the feed tube 81 is disposed in the second cavity 3. Based upon Fig 2, however, the feed tube 81 is on the other side of the wall 31 from the sleeve 3.

35 U.S.C. § 103:

Claims 6, 10, 27, and 33-35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Grimble in view of U.S. Patent Application Publication No. 2003/0022050 A1 to Barton, et al. The Applicant respectfully traverses the rejection for the reasons described above. With respect to independent Claim 21, the Applicant notes that Claim 27 has the three limitations described above not found in the cited references. The Applicant further notes that Grimble does not show a fuel vaporizer in fluid communication with a manifold or a manifold having a catalytic partial oxidation fuel reformer. The cited references thus do not contain at least five (5) limitations found in independent Claim 27.

Claims 7, 8, 36, and 37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Grimble in view of U.S. Patent No. 4,087,076 to Morrow, Jr., et al. The Applicant respectfully traverses the rejections for the reasons described above.

Claims 18 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schuler. The Applicant respectfully traverses the rejection for the reasons described above.

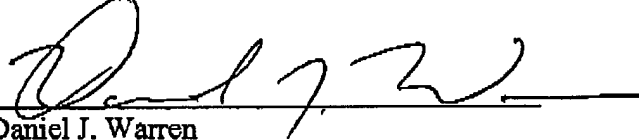
Claims 17-19, 12, and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schuler in view of U.S. Patent No. 6,291,089 to Piascik, et al. The Applicant respectfully traverses the rejection for the reasons described above.

The Examiner apparently also rejected Claims 22-27 under Schuler. The Applicant respectfully traverses the rejection for the reasons described above.

CONCLUSION

The Applicant believes it has responded to each matter raised in the Office Action. Allowance of all claims is respectfully solicited. Any questions may be directed to the undersigned at 404.853.8028.

Respectfully submitted,



Daniel J. Warren
Reg. No. 34,272

SUTHERLAND ASBILL & BRENNAN LLP

999 Peachtree Street, N.E.
Atlanta, Georgia 30309-3996
(404) 853-8000
(404) 853-8806 (Facsimile)
daniel.warren@sablaw.com

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